Using commercial catch data to investigate effects of air-guns on fish catch rates

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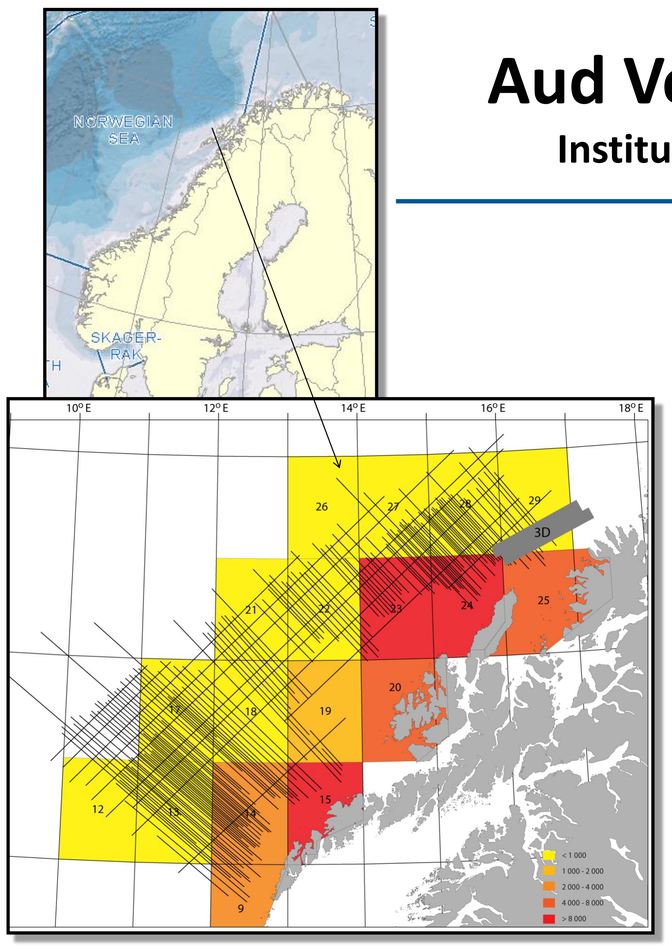


Study area with seismic survey lines and catch statistic rectangles. Color indicates intensity of fishing (yellow = low, red = high).

Background

Summer 2008 Norwegian authorities conducted seismic surveys with air-guns on important fishing grounds in Lofoten and Vesterålen, northern Norway. Fishermen claimed that this had a negative impact on their catches.

Approach and infirmities

To verify the fishermen's claims, official catch statistics were analyzed in order to document possible effects of seismic shooting with air-guns on the coastal fisheries in the area.

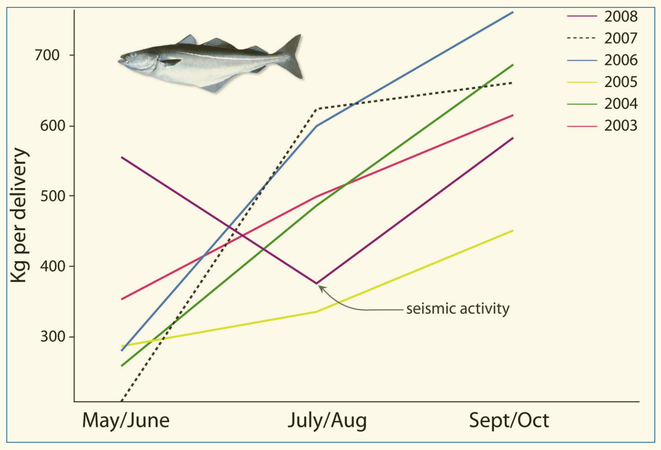
The databases had some infirmities, like insufficient information on effort, and position and time of catch. Thus, the results must be interpreted with caution. However, the findings are in line with those from a fishing experiment presented by Løkkeborg *et al*. at this conference.

Varying effects on catch rates were found:

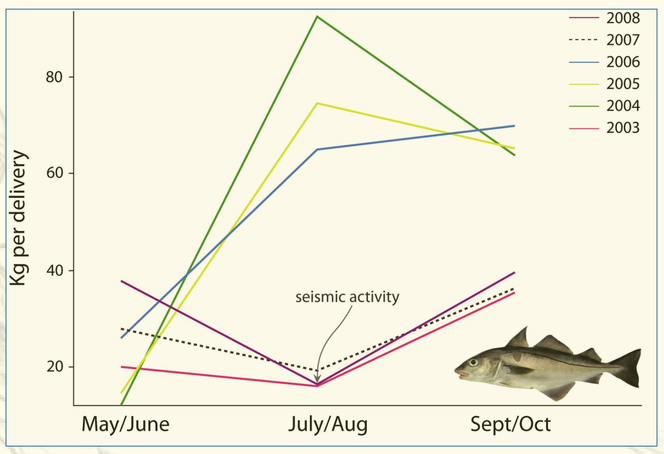
Decreasing:

Gillnet fisheries for

Saithe (*Pollachius virens*)



Haddock (*Melanogrammus aeglefinus*)

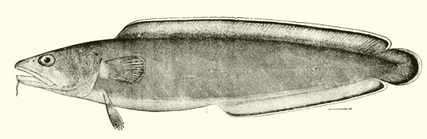


Interaction plots of catch rates

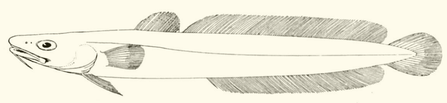
Stable:

Gillnet fisheries for

Tusk (*Brosme brosme*)



Ling (*Molva molva)*



Atlantic halibut (*Hippoglossus hippoglossus*)

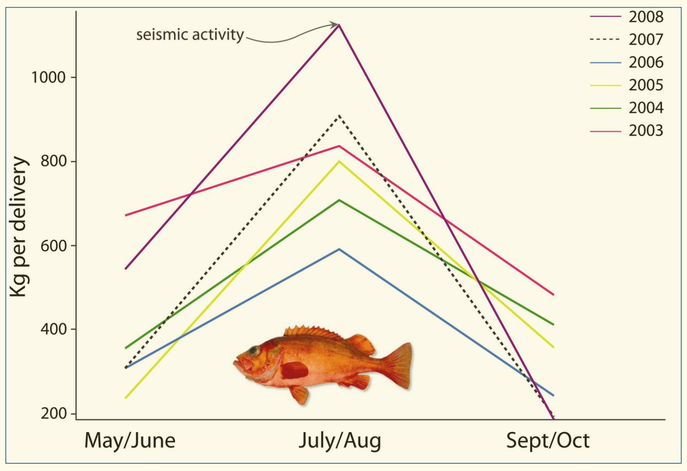
Hook-and-line fisheries (longline, jig): No measurable effects.

This may be because there were no effects, or because the data were not good enough to trace any effects.

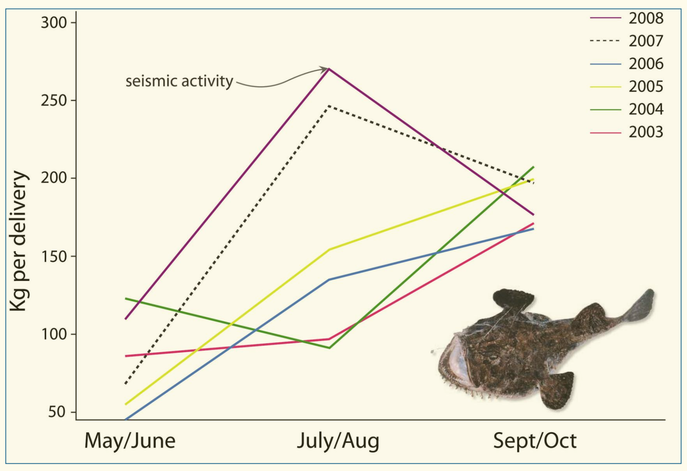
Increasing:

Gillnet fisheries for

Redfish (*Sebastes maritimus*)



Monkfish (*Lophius pisctatorius*)



Interaction plots of catch rates

Conclusion

Seismic shooting affects fish catch rates, but the effects may be in either positive or negative direction.

The changes are most likely caused by behavioural responses to noise, like increased swimming speed (fright response) and escape behaviour, which in some cases may lead to more frequent encounters between fish and gear (gillnet), while in others may lead to decreased fish availability and lower catch rates.

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